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Effects of the PRECEDE-PROCEDE Model on Self-Care Ability and Quality of Life Among Primipara During Puerperium

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Abstract

Background: Many parturients have poor self-care ability, strong dependence on others, and lack mother-infant related nursing skills and health care knowledge. Due to their lack of pregnancy experience, many primiparas lack the relevant skills and knowledge, which can affect maternal and infant health and maternal quality of life.

Purpose: The study aimed to investigate the effects of the PRECEDE-PROCEDE model on self-care ability and quality of life among primipara during puerperium.

Methods: This quasi-clinical study selected eligible primaparas from those who gave birth at a Grade A hospital in Hengyang, China between April and July 2019. Eighty puerperium primiparas were divided into a control group receiving standard care and an intervention group following the PRECEDE-PROCEDE model. Comparison of self-care ability and quality of life scores was conducted between the two groups pre-intervention, at 3 weeks, and at 6 weeks postpartum. Statistical analysis using SPSS 18.0 included mean and standard deviation for measurement data, and frequency and constituent ratio for counting data. Tests such as t-test, Chi-squared test, rank-sum test, and repeated measure analysis of variance were applied.

Findings: The control group's self-care ability scores were (150.8 ± 9.9), (150.9 ± 9.3), and (152.0 ± 10.2) before intervention, at 3 weeks postpartum, and at 6 weeks postpartum, respectively. For the intervention group, the corresponding scores were (151.1 ± 15.1), (157.8 ± 8.5), and (162.4 ± 7.2). Quality of life scores for the control group were (54.7 ± 8.6), (54.8 ± 7.7), and (55.1 ± 7.7) before intervention, at 3 weeks postpartum, and at 6 weeks postpartum, respectively. At the same time points, while the intervention group saw increases from (55.6 ± 7.6) to (59.2 ± 5.9) and (61.0 ± 5.3). There were statistically significant differences in the time effect and inter-group effect of the total score of self-care ability during puerperium, total score of quality of life, and the score of each dimension between the two groups ($P < 0.05$), and we also found an interaction effect between grouping and time factors ($P < 0.05$). After intervention, the incidence of common puerperium health problems except neonatal constipation and diarrhea in the intervention group was lower than that in the control group ($P < 0.05$).

Conclusion: PRECEDE-PROCEDE model may improve self-care ability, reduce the occurrence of common health problems, and improve the quality of life of primiparas during puerperium.

Keywords

Primipara, puerperal period, self-care, quality of life, PRECEDE-PROCEDE model

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Introduction

Puerperium refers to the period from the delivery of the placenta to the recovery of all organs of the puerpera to their normal state during nonpregnancy except the mammary gland, which is generally 6 weeks (Dong et al., 2019). This period is an especially important time for puerperas' physiological and psychological adjustment and physical recovery, a key period for primapara puerperas to adapt to their new role as mothers, as well as an important stage for the healthy growth of newborns (Xu et al., 2018). However, the health status of puerperal women at home and abroad is worrying (Thompson et al., 2002; Ye, 2016; Zhang et al., 2014). Parturients may experience perspiration, postpartum wound pain, breast swelling pain, nipple chapping, and

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emotional fluctuations, which can lead to conditions like postpartum depression and infections (Cheng et al., 2017; Tian et al., 2019). The vulnerable neonatal phase is critical, marked by the infant's weak immunity, leading to physiological jaundice, weight loss, and umbilical cord issues. Improper care may result in pathological jaundice, excessive weight loss, and infections. Furthermore, with the increase in family members, there are adjustments in family functions and roles, placing additional pressure on other family members for self-concept adaptation and role adjustment (Cooklin et al., 2015; Xu et al., 2018; Zhou et al., 2017).

The PRECEDE-PROCEDE model is a representative and widely applied intervention model in the field of health education and health promotion (Chen et al., 2019; Xi, 2018). The PRECEDE-PROCEDE model involves evaluating behavior motivation and influencing factors, designing targeted health education interventions for the target population, improving the level of relevant knowledge of the target population, attaching great importance to behavioral changes to target groups, and evaluating the effects of intervention (Li, 2018; Ma et al., 2018). Thus, the present study aimed to use PRECEDE-PROCEDE model to investigate its effect on the self-care ability and quality of life among primiparas during puerperium.

Review of Literature

The self-care ability of puerperal women includes three aspects: the belief of puerperal women to take care of themselves and their babies (self-care attitude), the knowledge and cognition of puerperal women to related maternal and infant knowledge (self-care knowledge), and the ability of puerperal women to take care of themselves and their babies (self-care skills) (Li, 2018). Previous studies have shown that the incidence of puerperium-related complications can be significantly reduced by improving maternal self-care ability (Dong et al., 2019; Ye, 2016). Moreover, improving the self-care ability of puerpera is one of the most effective measures to help mothers and infants pass their puerperium smoothly and safeguard their health (Ge & Chu, 2020). However, the study of puerperal women focuses on the use of continuous care and Orem self-care model to improve the ability of self-care during the puerperal period, and lacks a systematic and comprehensive targeted intervention model or intervention program (Ye, 2016). Therefore, it is necessary to establish appropriate interventions and provide tailored education training for mothers based on an effective training model, aiming to improve maternal self-care ability.

The World Health Organization defines quality of life as the experience of living conditions in relation to goals, expectations, standards and concerns of individuals in different cultures and value systems (Ilić et al., 2019). It includes various areas such as physical and mental health, social relationships, independence, personal satisfaction with faith and life, and relationship with the surrounding environment. In the 2018 Global Health report, it was pointed out that the physical and mental health of women and children is a long-term concern of the health system, and improving the quality of life related to maternal health is a priority of the health system (Chen et al., 2019). Puerperal women due to physiological, psychological state repeated, frequent changes cause physical discomfort, and then affect the postpartum quality of life.

PRECEDE-PROCEDE model is a health education promotion model proposed by Green et al. in 1980 (Ma et al., 2018), which analyzes various factors affecting health from multiple dimensions and develops comprehensive intervention measures from biological, psychological and social perspectives. PRECEDE-PROCEDE model has been applied to the health education of cardiovascular patients, cancer patients, diabetes patients and pregnant women at home and abroad, and has also been used in the research of health prevention and health care (Khani et al., 2023). For example, Dong et al. (2016) used PRECEDE-PROCEDE model to improve the self-management cognition and attitude of patients with esophageal cancer and improve and standardize their self-management behaviors. Iranian scholar discussed the impact of PRECEDE-PROCEDE model combined with self-management theory on the self-care behavior of type 2 diabetes patients, and the results showed that the educational intervention based on PRECEDE-PROCEDE model combined with self-management theory was effective in improving the self-care behavior of type 2 diabetes patients (Azar et al., 2018).

Methods

Study Design and Setting

The present research is a quasi-experimental study, to select eligible primaparas from those who delivered in the obstetrics department of a Grade A hospital in Hengyang, China from April to July, 2019, we used the convenience sampling method.

Participants

Our inclusion criteria were the following. The women had to be full-term primiparas; the mother and child had to be living together; and the women had to volunteer to participate in the study.

We excluded women with cognitive impairment, or who were unable to read and communicate effectively in Chinese; women who had serious obstetric or maternal complications; and women with abnormal newborns.

Sample Size

The sample size required for this study was calculated according to the sample size formula required for the comparison of

two sample means:

$$n_1 = n_2 = 2 \times \left[\frac{(u_\alpha + u_\beta)}{\delta / \sigma}\right]^2 + \frac{1}{4}u_\alpha^2$$

Based on bilateral α=0.05, 1-β=0.90 and δ/σ=0.80, the sample content was estimated, and the sample size was calculated as 34 cases in each group according to the formula. Considering that there might be sample loss during the study, the sample size was expanded by 20% on the original basis to reduce the error, and the sample size was finally determined to be 80 cases. There were 40 cases in the intervention group and the control group. The investigator placed folded labels numbered 01–80 in the carton. After obtaining the informed consent of the study subjects, the study subjects randomly selected a slip of paper, with odd numbers in the intervention group and even numbers in the control group. To avoid the interference between the intervention group (n = 40) and the control group (n = 40), they were respectively placed in the hospital on the seventh and eighth floors of the obstetrics department.

Ethical Consideration

The study was conducted in accordance with the guidelines proposed in the Declaration of Helsinki, and University of South China Ethics Committee granted ethical approval for this study (2018NHHL005). All participants gave written informed consent before participation.

Intervention

We intervened in the two groups differently as follows. The control group was treated according to conventional nursing standards, and this included regular measurement of maternal vital signs; paying attention to keep the ward warm and well-ventilated; monitoring diet, sleep, urination, posture and out of bed activities and other matters needing attention; bladder, breast and perineum care and hygiene guidance; guidance for maternal breastfeeding; and performing routine follow-up telephone calls after discharge once a week until 6 weeks after childbirth. For the intervention group we used the PRECEDE-PROCEDE model for intervention based on routine health education. This model has several distinct areas, which we describe in detail below.

During the evaluation stage of the model we evaluated the status of self-care attitude, self-care knowledge, and self-care skills of primiparas by using the Self Rating Scale for Self Care Ability of puerperal women (SRSSCAPW) (Li, 2018). We also conducted in-depth interviews with a subsample of 15 primiparas in puerperium, analyzed the data, and summarized the predisposing, reinforcing, and enabling factors affecting their self-care ability, which is summarized as follows.

Predisposing Causes: We observed the following misunderstandings in newborn and self-care: worrying about wound opening and not getting out of bed early; nursing only chosen when the breasts are swollen; misjudging the if the baby is full or if milk is not enough so as to add milk powder; being afraid of boiling milk powder for the baby to drink as soon as the baby is born; worrying about whether the baby is too cold in an air-conditioned room and wrapping the baby too thick; worrying about the ventilation in the rooms where the windows don't open; and a lack of self-care skill in breastfeeding posture, nursing methods, baby bathing and massage, etc.

Enabling Causes: Maternal mothers get information from publicity boards, television, the internet, newspapers, and medical staff, as well as health information from their mothers, mothers-in-law, and relatives, but often lack the ability to identify a certain kind of information in maternal and child health. At the hospital where the study took place, the department was short of professional education personnel, puerperal self-care informational materials were inadequate, there was no formal puerperal health education process or health quality evaluation standard, and there was a lack of a puerperal self-care behavior management system.

Reinforcing Causes: Family support can be weak, and relatives often ignore maternal health and only pay attention to the baby, and sometimes there is a lack of continuing care support such as home visits or telephone follow-up visits by medical staff.

Promoted the Formation and Implementation of Predisposing Causes

1. Special lectures were held during maternal hospitalization, and the lecture time will be adjusted according to the length of hospitalization days, with each lecture lasting 30–40 min, 4 times in total.

1. The importance of puerperal self-care and how to do puerperal care correctly (puerperal common health problems' prevention and treatment, such as breast swelling, poor uterine rejuvenation, puerperal infection, constipation, hemorrhoids, etc.)
2. Corrected some mistakes in experience, such as not being able to brush teeth or wash hair and bath, needing tonic for the body, not being able to eat fruits and vegetables, not being able to get out of bed, etc.
3. Guidance of breast-feeding, evaluation of newborn growth and development, timing of newborn immunization, etc.
4. Newborn bathing, handling, breastfeeding, and other related skills training

2. Health brochures were distributed and health posters were put up in wards.

Promoted the Formation of Enabling Causes

1. Established an education team (one international galactagogue and midwifery expert, one head nurse and midwifery expert, plus one international galactagogue expert and two graduate students), the midwifery expert was responsible for maternal care, baby care, postpartum life and other guidance, and the international galactagogue expert was responsible for breastfeeding guidance. The head nurse was responsible for coordination, and the other midwifery expert and graduate students were responsible for maternal group education, individual guidance, and follow-up consultations, and they were also responsible for the dissemination and explanation of educational materials.
2. Established a self-evaluation system for the health education of primiparas during puerperium (self-evaluation of women's self-care ability and quality of life during puerperium), give feedback and notice improvement continuously, and improved the quality of health education.

Promoted the Formation of Reinforcing Causes

1. Invited subjects' husbands, parents-in-law or other puerperium caregivers to attend health education lectures and skills training to build confidence in self-care, create a comfortable atmosphere, and play a supervisory role.
2. Established a WeChat group, and with the help of group management a small program "community space". Exchanged experience with each other, have given guidance to common problems, formulated rectification plans and measures, and made continual improvement and given feedback. The small program should have periodic reminders and group activities. Statistical analysis of group data can be used to help strengthen group interaction according to the data, promote an active atmosphere in the group, and potentially solve some practical problems. Telephone follow-ups were conducted once a week after discharge.

Outcome Evaluation

1. **The SRSSCAPW:** The SRSSCAPW comprehensively measures the ability of women to take care of themselves and infants during puerperium, covering their self-care attitude, self-care knowledge, and self-care skills and includes 42 items divided into five grades (Li, 2018). The higher the score, the stronger the maternal self-care ability. Li conducted scientific and comprehensive monitoring of this scale and found that it has good reliability and validity (Li et al., 2018). Li's results show that the total Cronbach's α coefficient was 0.937, the standardized Cronbach's α coefficient of items was 0.938, and the Cronbach's α coefficients of self-care attitude, self-care knowledge, and self-care skills were 0.848, 0.865, and 0.912, respectively.
2. **The World Health Organization Quality of Life Assessment Instrument Brief Version (WHOQOL-BREF):** The WHOQOL-BREF is a scale that contains 26 items in four fields: physiology, psychology, social relationships, and environment. Additionally, item 3, item 4, and item 26 on the scale were calculated using the reverse scoring method. After weighted calculation, the score of each dimension ranged from 4 to 20 points, and the higher the score, the better the functional level of the particular dimension and the higher the satisfaction with life (Ilić et al., 2019). The WHOQOL-BREF has nearly 30 different language versions, and its measurement results are comparable with WHOQOL-100, which has been shown to have good reliability and validity (Goes et al., 2021).
3. **The occurrence of common health problems and sticking to exclusive breastfeeding:** Maternal health problems: postnatal constipation, cracked nipple, breast swelling, lack of sleep, lack of parenting knowledge; Newborn health problems: week of umbilical infection, red buttock, eczema, constipation, diarrhea; Counting the number of people who sticking to exclusive breastfeeding.

Data Collection

Before the intervention, online questionnaires and scales were used to collect Socio-demographic characteristics, maternal self-care ability and quality of life. From the intervention to 3 weeks after delivery, through questionnaire survey and follow-up, the controllable risk factors affecting the self-care ability of primiparas were analyzed. From the intervention to 3 weeks after delivery, the self-care ability and quality of life of primiparas were investigated and followed up by questionnaire. The participation and support of primiparas were evaluated according to the group interaction. Six weeks after delivery, primiparas' self-care ability, quality of life and the incidence of puerperium health problems were evaluated by questionnaire survey and follow-up.

Statistical Analysis

We used SPSS 18.0 to carry out statistical analysis of our data using mean and standard deviation to describe the measurement data and frequency and constituent ratio to describe counting data. Statistical analysis was performed by *t*-test, Chi-squared test, rank-sum test, and repeated measure analysis of variance. A value of $P < 0.05$ was considered to be statistically significant.

Results

Socio-Demographic Characteristics of Study Participants

Table 1 provides information on Socio-demographic characteristics of study participants. Most of the participants in both groups were between 26 and 30 years old. A majority of the

Table 1. Comparison of General Data Between the Control and Intervention Groups (n = 80).

Variable	Control group (n = 40)	Intervention group (n = 40)	x^2/Z	*P*
Age(years)			−0.292[b]	0.770
≤20	2 (5.0)	1 (2.5)		
21–25	12 (30.0)	10 (25.0)		
26–30	19 (47.5)	24 (60.0)		
31–35	7 (17.5)	5 (12.5)		
Education level			−0.222[b]	0.824
Junior high and below	6 (15.0)	4 (10.0)		
Senior high school (including technical secondary school)	5 (12.5)	5 (12.5)		
College (including junior college)	22 (55.0)	28 (70.0)		
Master's degree and higher	7 (17.5)	3 (7.5)		
Occupation			10.800[a]	0.148
National civil servant	1 (2.5)	2 (5.0)		
Medical worker	3 (7.5)	5 (12.5)		
Teacher	5 (12.5)	11 (27.5)		
Company employee	9 (22.5)	7 (17.5)		
Technician	8 (20.0)	2 (5.0)		
Businessman	5 (12.5)	1 (2.5)		
Farmer	3 (7.5)	2 (5.0)		
Other	6 (15.0)	10 (25.0)		
Home address			1.841[a]	0.175
City	26 (65.0)	20 (50.0)		
Village	14 (35.0)	20 (50.0)		
Marital status			1.386[a]	0.500
Not married	1 (2.5)	2 (5.0)		
First marriage	39 (97.5)	37 (92.5)		
Remarried	0	1 (2.5)		
Family monthly income			−0.640[b]	0.522
<3000RMB	1 (2.5)	1 (2.5)		
3000–5000RMB	9 (22.5)	10 (25.0)		
5000–8000RMB	21 (52.5)	23 (57.5)		
≥8000RMB	9 (22.5)	6 (15.0)		
Delivery mode			1.317[a]	0.251
Vaginal delivery	27 (67.5)	22 (55.0)		
Cesarean delivery	13 (32.5)	18 (45.0)		
Maternity leave time(months)			−1.084[b]	0.278
≤4	5 (12.5)	3 (7.5)		
4–6	17 (42.5)	26 (65.0)		
>6	18 (45.0)	11 (27.5)		
Feeding patterns			2.192[a]	0.334
Exclusive breastfeeding	15 (37.5)	9 (22.5)		
Mixed feeding	23 (57.5)	29 (72.5)		
Bottle-Feeding	2 (5.0)	2 (5.0)		
Attended maternity school				
Yes	9 (22.5)	7 (17.5)	0.313[a]	0.576
No	31 (77.5)	33 (82.5)		
Telephone follow-up or home visit guidance			2.739[a]	0.098
Yes	10 (25.0)	17 (42.5)		
No	30 (75.0)	23 (57.5)		

[a]Analyzed using Chi-square test.
[b]Analyzed using rank-sum test.

women were College (including junior college) level; the number of women College (including junior college) level was significantly higher in the intervention group. More than half of the participants in both groups choose mixed feeding. Over three-fourths of the participants in both groups did not attended maternity school. More than half of the participants in both groups had not received telephone follow-up or home visit guidance. There were no statistically

significant differences in Socio-demographic characteristics between the control and intervention groups.

Descriptive Analysis of Self-Care and Quality of Life

Table 2 presents the results of self-care and quality of life among two groups during three time periods. After intervention, the scores of self-care attitude, self-care knowledge, self-care skills, the total score of self-care, and the total score of quality of life in the intervention group were significantly higher than those in the control group.

Repeated-Measures Analysis of Variance on the Intervention Effects on Self-Care and Quality of Life

In Table 3, we see that the result of repeated measure analysis of variance shows that the time effect of the self-care total score and quality of life total score between the two groups was statistically significant ($P < 0.01$). If the time factor is not taken into account, then we find a statistically significant difference in the grouping effect between the total scores of self-care and total scores of quality of life ($P < 0.01$) as well. Additionally, there was a statistically significant interaction between group and time ($P < 0.01$), indicating that the time effect was different with different groups, showing the effectiveness of health intervention in intervention group.

Comparison of the Occurrence of Health Problems Between the Control and Intervention Groups After Intervention (6 Weeks After Delivery)

As shown in Table 4, the incidence of health problems for maternal and newborn in the intervention group was less

Table 2. Descriptive Analysis of Self-Care and Quality of Life ($\bar{x} \pm s$, n = 80).

Variables	Group	T0	T1	T2
Self-care	**Control**	150.8 ± 9.9	150.9 ± 9.3	152.0 ± 10.2
	Intervention	151.1 ± 15.1	157.8 ± 8.5	162.4 ± 7.2
t		−0.131	−3.450	−5.256
P		0.896	0.001	0.000
Quality of life	**Control**	54.7 ± 8.6	54.8 ± 7.7	55.1 ± 7.7
	Intervention	55.6 ± 7.6	59.2 ± 5.9	61.0 ± 5.3
t		−0.536	−2.881	−3.977
P		0.593	0.005	0.000

T0: Before Intervention; T1: 3 weeks after childbirth; T2: 6 weeks after childbirth.

Table 3. Repeated-Measures Analysis of Variance on the Intervention Effects on Self-Care and Quality of Life (n = 80).

	Intervention effects			Time effects			Interaction effects		
Variables	*F*	*P*-value	partial η^2	*F*	*P*-value	partial η^2	*F*	*P*-value	partial η^2
Self-care	8.336	0.005	0.097	21.673	0.000	0.217	14.472	0.000	0.157
Quality of life	5.593	0.021	0.067	69.493	0.000	0.471	50.188	0.000	0.392

Table 4. Comparison of the Occurrence of Health Problems Between the Control and Intervention Groups After Intervention (n = 80).

Items		Control Group (n = 40)	Intervention Group (n = 40)	x^2	*P*
Maternal health problems	Postnatal constipation	8	2	4.114	0.043
	Cracked nipple	6	1	3.914	0.048
	Breast swelling	8	1	6.135	0.013
	Lack of sleep	14	5	5.591	0.018
	Lack of parenting knowledge	10	2	6.275	0.012
Newborn health problems	Week of umbilical infection	4	0	4.211	0.040
	Red buttocks	7	1	5.000	0.025
	Eczema	6	1	3.914	0.048
	Constipation	7	2	3.130	0.077
	Diarrhea	2	0	2.051	0.152
Breastfeeding	Sticking to exclusive breastfeeding	13	25	7.218	0.007

than the control group except constipation and diarrhea, and the number of women who persisted in exclusive breastfeeding was also higher than the control group.

Discussion

Our study showed that employing the PRECEDE-PROCEDE model improved the self-care ability, reduced the occurrence of common health problems during puerperium, and improved primaparas' quality of life. The results were congruent with the outcomes of Dong et al. (2016), who used the PRECEDE-PROCEDE Model for intervention, analyzing and synthesizing tendencies, promoting factors, and reinforcing elements. Based on these factors, they provided training in self-management knowledge and skills specific to esophageal cancer. They established communication platforms such as WeChat and QQ to offer learning materials including images and catalogs. Feedback was gathered through self-assessments, supervision by family members, and assessments, which effectively improved self-management levels. In this study, a series of evaluations were conducted to determine the tendencies, promoting factors, and reinforcing elements affecting the self-care abilities of first-time mothers during the postpartum period, leading to the development of targeted health education plans. An education team was formed to distribute and explain promotional materials, creating a self-assessment system for postpartum health education. Continuous feedback and improvements were made to enhance the quality of health education. Additionally, specialized lectures were held in the department to correct common misconceptions, raise awareness about preventing and addressing prevalent health issues during the postpartum period, and provide training in skills related to breastfeeding and newborn bathing. Primary caregivers were invited to participate, promoting confidence among the study subjects and creating a supportive environment to monitor their self-care behaviors. After discharge, communication channels were established, including a WeChat group and follow-up calls, urging community health service centers to conduct postpartum visits. This initiative aimed to address various postpartum issues faced by first-time mothers while standardizing their self-care practices, thus enhancing their self-care abilities. These measures increased the self-care abilities of first-time mothers during the postpartum period, likely due to the PRECEDE-PROCEDE Model's approach, which emphasized not only knowledge enhancement but also interventions in beliefs and behaviors, leading to more effective outcomes. Moreover, active participation from subjects and their families in identifying health problems and formulating solutions boosted their initiative and improved intervention efficacy and self-care capabilities (Wang et al., 2018).

Research has shown that adequate social support during the postpartum period benefits both the physical and mental health of first-time mothers and promotes the healthy growth of newborns, ultimately enhancing their quality of life (Zhu, 2017). In this study, by intervening in reinforcing factors such as family social support, the quality of life for first-time mothers during the postpartum period was positively influenced. By addressing tendencies, correcting misconceptions, and increasing health knowledge, self-care skills during the postpartum period were enhanced, leading to improved physical and mental health and overall quality of life for mothers.

Many studies have shown that health intervention programs based on the PRECEDE-PROCEDE model can help people form healthy behaviors and good self-management habits, promote health, and improve life quality (Azar et al., 2018; Dong et al., 2016; Ma et al., 2018). Studies have shown that if learned knowledge cannot be strengthened, then retained knowledge can gradually decrease. Furthermore, when there is no external supervision, it is difficult to maintain learned skills for a long time only by relying on one's own initiative (Yang & Chen, 2018). This also proves the effectiveness of PRECEDE-PROCEDE model for promoting and reinforcing factors.

Strengths and Limitations

A strength of this study is that using questionnaire and scale measurement, medical records and the mother's interview to strengthen the intervention fidelity. The study uses strict inclusion criteria during selections of primiparas during puerperium for both groups to have comparable participants on basic obstetrics characteristics. Limitations of the study are related to the study design (quasi-experimental) which lacks randomization. This study only examined the short-term effect of PRECEDE-PROCEDE model intervention on the self-care ability of puerperium primiparas due to the limitations of our research conditions and time.

Implications for Nursing Practice

In the process of PRECEDE-PROCEDE model intervention, we observed improvement of self-care ability of primiparas during puerperium indicates that their self-care knowledge increased, they enhanced their skills, their family members and social support increased, their self-care confidence increased, and their health problems decreased, thus improving their quality of life. This study can provide reference for hospital obstetrics and community maternal and child health care workers to innovate the content and model of puerperal health education. Consequently, this will help improve overall health outcomes for this specific group.

Conclusion

In conclusion, use of the PRECEDE-PROCEDE model improved the self-care ability of primiparas during

puerperium, reduced the occurrence of common health problems during puerperium, and improved primaparas' quality of life.

In the future, high-quality RCTS, which expanding the sample size, extending the intervention time, and examining the longer term effects of the PRECEDE-PROCEDE model on primaparas, should be conducted.

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Authors' Contributions

Xueli Lei completed all statistical and data analysis. Dr. Yanhui Zhou contributed to the writing and editing of this manuscript. Both authors contributed to the design and implementation of the research. Both authors read and approved the final manuscript.

Declaration of Conflicting Interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Ethics Approval and Consent to Participate

The study was conducted in accordance with the guidelines proposed in the Declaration of Helsinki, and University of South China Ethics Committee granted ethical approval for this study. All participants gave written informed consent before participation.

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